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Outcome expectancy as a process indicator in comprehensive worksite stress management interventions

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DOI: <https://doi.org/10.1037/a0039202>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-117597>

Journal Article

Accepted Version

Originally published at:

Fridrich, Annemarie; Jenny, Gregor J; Bauer, Georg F (2016). Outcome expectancy as a process indicator in comprehensive worksite stress management interventions. *International Journal of Stress Management*, 23(1):1-22.

DOI: <https://doi.org/10.1037/a0039202>

Abstract

This study investigates the relationship between outcome expectancy for an individual stress management course and the total perceived impact of a comprehensive stress management intervention (SMI). It is based on data from three different measurement points from a longitudinal SMI in Switzerland. Individual and organizational outcome expectancies for stress management courses were captured with two newly developed items (SMI outcome expectancy) immediately after course completion. Perceived individual and organizational impacts of the overall intervention captured with two items of a retrospective impact assessment scale (perceived SMI impact) at the two-year follow-up survey were used as the outcome measurement. Baseline individual and organizational change commitments (as rated by participants) were included in the analyses as possible moderators. Regression analyses show that individual and organizational outcome expectancies in respect of stress management courses can to some extent predict the perceived impact of the intervention as a whole. At the individual level, an intervention will be perceived as most successful when participants already have a high individual change commitment and develop high outcome expectancies during stress management courses.

Keywords: stress management intervention, process evaluation, change process, outcome expectancy, change commitment

Outcome expectancy as a process indicator in comprehensive worksite stress
management interventions

In recent years, various studies have shown that work-related stress is associated with physical and social health problems for employees and with negative economic consequences for organizations (cf. Bond, Flaxman, & Loivette, 2006; van der Hek & Plomp, 1997). This insight has prompted an increase in worksite stress management interventions (SMIs) addressing psychosocial job-stress factors and coping strategies, and in studies assessing the impact of such interventions. Initially, most SMIs were conducted at the individual level (Giga, Noblet, Faragher, & Cooper, 2003)—that is, focusing on changing the individual's perception of stress and teaching participants how to cope with stress, which should ideally lead to experiencing reduced stress. At the organizational level, however, SMIs that aim at promoting organizational change processes—such as reducing organizational stressors or enhancing resources—and comprehensive SMIs involving a combined focus on both the individual and the organization are gaining increased attention (LaMontagne, Keegel, Louie, Ostry, & Landsbergis, 2007).

Diverse meta-analyses (e.g., Richardson & Rothstein, 2008; van der Klink, Blonk, Schene, & van Dijk, 2001) and reviews (e.g., Bambra, Egan, Thomas, Petticrew, & Whitehead, 2007; Egan, 2013; Egan et al., 2007; Giga et al., 2003; LaMontagne et al., 2007; Murphy, 1996) have sought a) to investigate whether worksite SMIs are effective in general and b) to identify the most promising types of worksite SMIs. These reviews and meta-analyses report generally positive findings for the effectiveness of individual-level SMIs (e.g., Richardson & Rothstein, 2008), but relatively few studies have evaluated the effectiveness of organizational-level SMIs. Results from these studies are mixed (Egan et al., 2007; Nielsen & Abildgaard, 2013), often demonstrating either small or no effects. To an extent, the evidence suggests that while some organizational-level interventions have failed at

a global level, considerable change has nevertheless occurred in some sub-groups (Biron, Gatrell, & Cooper, 2010).

Various authors have recommended that the needs of both the organization and individual employees should be addressed by means of comprehensive SMIs comprising individually-focused intervention elements such as stress management courses, as well as organization-focused intervention elements such as leadership courses and team-level workshops (e.g., LaMontagne et al., 2007; Semmer, 2006). In comprehensive SMIs, stress management courses often aim both to change the individual dealing with stress and to develop the capacities, motivation, and positive expectancies that underpin processes of individual and organizational change, which should be mutually reinforcing. The increased complexity of comprehensive SMIs means that outcomes are less predictable. In order to gain a better understanding of the change processes triggered by such comprehensive interventions, and of why some interventions succeed and others fail, more research is needed on the process of intervention (Biron, Karanika-Murray, & Cooper, 2012; Cox, Karanika-Murray, Griffiths, & Houdmont, 2007; Nielsen & Abildgaard, 2013; Nielsen, Fredslund, Christensen, & Albertsen, 2006; Semmer, 2006).

In recent years, evaluation of the intervention process has come to play an essential role in organizational health intervention research (Biron & Karanika-Murray, 2014; Randall, 2013), even though “process evaluation is still in its infancy and primarily consist of checklists inspired by public health intervention literature” (Nielsen, 2013, p. 1) such as the “key process evaluation components” of Linnan and Steckler (2002, p. 12). In their systematic review of SMIs, Murta, Sanderson, and Oldenburg (2007) identified *recruitment*, *dose received*, *participants’ attitudes* and *reach* as the four most frequently used components of process evaluation. Meanwhile, participants’ appraisals of interventions (e.g., Nielsen, Randall, Brenner, & Albertsen, 2009; Randall & Nielsen, 2012) have gained increased

attention; individual perceptions of an intervention seem to exert a strong influence on participants' behavior, which ultimately influences outcomes (Nielsen, Randall, Holten, & Gonzales, 2010; Randall, 2013; Randall, Cox, & Griffiths, 2007). Approaches that link process issues and outcome measures are still scarce (Biron & Karanika-Murray, 2014; Murta et al., 2007), but all studies that report combined process and outcome evaluation measures showed significant relationships (e.g., Bunce & West, 1996; Nielsen, Randall, & Albertsen, 2007; Randall, Nielsen, & Tvedt, 2009). However, most studies capture quantitative process appraisals retrospectively and outcome measures simultaneously, which might carry the risk of hindsight biases and prevent that process measures from being used for monitoring (Randall et al., 2009; Randall, 2013).

Turning to the currently available instruments for measuring appraisal in SMI research, one is confronted with a range of disparate and for the most part project-specific approaches. For instance, researchers have assessed the awareness and involvement of participants (Randall, Griffiths, & Cox, 2005), satisfaction with treatment (e.g., Brouwers, Tiemens, Terluin, & Verhaak, 2006; Joosen, Frings-Dresen, & Sluiter, 2011), quality and sustainability of interventions (Nielsen et al., 2007), and exposure to components of the intervention (Randall et al., 2009). Most of these studies capture appraisals of the entire intervention, but only a few capture appraisals of particular intervention elements (e.g., *session evaluation*; Busch, Staar, Aborg, Roscher, & Ducki, 2010). In comprehensive interventions, this information is needed in order to investigate the effect of a particular component/element and to compare it to the effect of other elements. Linking appraisal of particular intervention elements with outcome data allows conclusions to be drawn about the importance of particular intervention elements to overall impact.

The present paper aims to investigate whether the outcome expectancy for a particular intervention element—in this case, an individual stress management course—is a relevant process indicator in SMIs.

Outcome Expectancy as Process Indicator in Cognitive Behavior Research

Outcome expectancy (OE) can be described as the anticipation of a positive or negative experience resulting from a given event or behavior. Very early studies in a clinical context highlighted the role of OEs in the success of therapies (e.g., Goldstein, 1960), and current clinical studies emphasize OE as “a powerful change ingredient” (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011, p. 184).

According to Bandura (2004), OE is one of the core psychological determinants in social cognitive theory. Along with Bandura’s own self-efficacy theory (Bandura, 1997), other social cognitive models and theories of health behavior change, such as the health action process model (Schwarzer, 2008), the transtheoretical model (Prochaska & Velicer, 1997), the theory of planned behavior (Ajzen, 1991), and the cognitive phenomenological model of stress and coping (Lazarus & Folkman, 1984) all use OE to explain behavior change. While the definition and importance of OE varies across theories and models, all of them assume a significant association between positive OE for a particular behavior and the likelihood that the behavior will actually ensue (cf. Williams, Anderson, & Winett, 2005). These theories usually understand OEs as expectancies resulting from self-directed behavior change and therefore assume that OEs will influence a person’s decision to engage in the particular behavior, or not.

To date, only a few studies have explored OE in the context of organizational research. Ning and Jing (2012) investigated the role of expectation of change outcome at the individual level in an organizational change process. They defined expectation of change outcome as “one’s expectation of how an organizational change will impact his/her own job” (p. 462),

and they found that this expectation is positively associated with affective and normative commitment to change. Another study (Conklin, Dahlin, & Garcia, 2013) demonstrated a positive relationship between OE for career performance and affective commitment. In contrast, individual-level worksite SMIs have rarely examined the role of OE in the individual change process. If at all, expectations are captured retrospectively and at the same time as outcome measurements, which might be biased (e.g., Randall et al., 2009). For instance, Sørensen and Holman (2014) asked the participants, as part of their follow-up, survey “Did you expect the project to be successful?” (p. 75). They did not find differences in outcomes between the high and the low expectations group, which might be caused by hindsight biases or by the simultaneous collection of process and outcome measures.

However, several studies on increasing physical activity have included OE as a process indicator in order to better understand the psychological mechanisms triggering behavior change (e.g., Bowe, 2012; Prodaniuk, Plotnikoff, Spence, & Wilson, 2004; Resnick, Zimmermann, Orwig, Furstenberg, & Magaziner, 2000; Wójcicki, White, & McAuley, 2009). For instance, Maddux, Sherer, and Rogers (1982) demonstrated that manipulative increase of OE leads to incremental intentions to perform an outcome behavior. Other studies (Feather & Newton, 1982; Feather, Woodyatt, & McKee, 2011) showed that willingness to support an activity is influenced by the OE for this activity. In their review of the role of OE in physical activity research, Williams et al. (2005) reported mixed results for the relationship between OE and physical activity, which may have been caused by differing conceptualizations of OE.

Aim and Hypotheses

The present study explores the role of outcome expectancy as a relevant process indicator in a comprehensive SMI by investigating the relationship between OEs regarding an individual stress management course and the total perceived impact of a comprehensive SMI.

Figure 1 illustrates the underlying concept of individual and organizational change processes in the context of a comprehensive SMI. The baseline survey (t_0) stimulates self-reflection and communication among the participants and so may be viewed as the starting point of the change process (cf. Inauen, Jenny, & Bauer, 2011). The SMI comprises several intervention elements—in the present case, leadership courses, stress management courses, and team reflection workshops—which together induce processes of individual and organizational change. In the long term, the change process should lead to effects at both individual and organizational levels. The present study focuses on non-supervisory employees who participated in a stress management course and from whom OE ratings of the course were available. It is assumed that their OEs have an influence on the individual and organizational change processes and, as such, on their final perceived impact. As illustrated in Figure 1, four hypotheses were proposed, concerning the respective roles of OE and change commitment in the process of change in comprehensive SMIs.

--- Insert Figure 1 about here ---

In the context of worksite SMIs, OE was defined in terms of participants' expectations of change outcomes in regard to an intervention element. According to the cognitive phenomenological model of stress and coping (Lazarus & Folkman, 1984), an individual's expectation of change outcome can be described as a cognitive appraisal of how change will influence his/her wellbeing. Research has shown that OE for a particular behavior is significantly related to behavioral intentions (Maddux et al., 1982; Williams et al., 2005) and to actual behavior (Resnick et al., 2000). Based on these findings, we presumed that the individual OE for a stress management course would influence one's intention to change his/her stress-related behavior in response to the course and that this intention to change one's behavior would result in actual behavior change. In other words, an individual with high individual OE for a stress management course might be expected to work on improving

her/his stress-related behavior while an individual with low individual OE might make less effort. This change in one's stress-related behavior is expected to lead to a higher individual impact of the SMI and, consequently, will be perceived as such. There are a lot of possibly confounding variables that might influence the relationship between OE for the stress management course and the perceived impact of the SMI as a whole, such as other intervention elements, communication among colleagues, supervisor behavior, etc. However, research on the effectiveness of SMIs (e.g., Richardson & Rothstein, 2008) has demonstrated moderate to strong effects for individual interventions on individual outcomes. Therefore, we assume that—despite the possible confounding factors—OE for a stress management course as an individually focused intervention element will at least partly influence the individual change process and, thus, the perceived impact at the individual level. This leads to the following hypothesis:

H1a: Individual OE for a stress management course predicts the perceived individual impact of the SMI as a whole.

Since the individual stress management component of comprehensive SMIs aims to empower employees for individual change and to prepare them for the organizational change process, we assumed that organizational OE for a stress management course was an appraisal of the anticipated organizational impact of the stress management course. As empirical research shows that OE in relation to a given project is positively related to a willingness to support this project (Feather et al., 2012), we assume that an individual decides whether he/she should support and participate in the organizational change process on the basis of this appraisal. A high intention to support the organizational change process will manifest itself in supportive behavior. In other words, an individual with high organizational OE for a stress management course will actively support the organizational change process by, for instance, participating in a work group that aims to restructure work routines. This supportive behavior

will influence the organizational change process and is, thus, expected to lead to a higher organizational impact of the SMI and, consequently, will be perceived as such by the respective participants. Indeed, an individual employee can influence the organizational change process only to some degree. Other influencing factors, such as structural changes, might impact the organizational change process to a greater degree. Nevertheless, we assume that employees will rate the perceived impact on the basis of changes in their nearest work environment. Within this work environment, their own influence on the organizational change process is greater; thus, the impact of organizational OE on perceived organizational impact will be substantial. On this basis, we advanced the following hypothesis:

H1b: Organizational OE for a stress management course predicts the perceived organizational impact of the SMI as a whole.

Commitment is another construct that has been shown to be associated with OE. In a study of career performance, Conklin et al. (2013) demonstrated significant correlations between OE and affective commitment. In their study of organizational change, Ning and Jing (2012) also found high significant correlations between expectation of work-related outcome and both affective and normative commitment. The present study investigated the relationship between individual and organizational change commitment at baseline and OE in respect of a given element of the intervention. Change commitment was measured as a general willingness to participate in and support health-promoting change activities. The items were directly related to change-supportive behavior. In comparison to the OE and impact ratings, which directly referred to the implemented SMI, change commitment referred to the *general* willingness to participate in and to support health-promoting activities.

We assumed that this general change commitment might influence whether, in the context of a specific SMI, the *behavior change intention* expressed by OE will manifest in *actual behavior change*. Thus, a moderating role was assumed for commitment to change at

individual and organizational levels—that is, a high baseline commitment to change enhances the likelihood that any behavioral intentions shaped by the OE will result in high perceived individual and organizational impact. This leads to the following hypotheses:

H2a: The relationship between individual OE and perceived impact of the SMI at the individual level is moderated by individual change commitment.

H2b: The relationship between organizational OE and perceived impact of the SMI at the organizational level is moderated by organizational change commitment.

Method

The Underlying Comprehensive SMI

The data used for the present analysis ($N = 145$) came from a longitudinal comprehensive SMI study that was implemented in eight medium and large Swiss organizations between 2008 and 2011 (see acknowledgements). A newly developed comprehensive questionnaire, S-Tool (developed at the University of Bern, Chair Prof N. Semmer; for more details see www.s-tool.ch), was employed at three measurement points at one-year intervals (2008, 2009, 2010). For this study, only data from the first and third measurement points were included. This was the principal quantitative instrument used to assess job demands, resources, health, and wellbeing, also capturing information on commitment to change and perceived impact of the SMI. After completion of the survey, the S-Tool provided the participants with automatic feedback. Over the course of this SMI, a variety of activities that included stress management courses for non-supervisory employees, leadership courses for employees with a supervisory function, and team reflection workshops were implemented by three consulting firms.

The stress management courses (one day in duration, with a further half-day for refreshers about six months later) took place during the first half of the SMI. Participation in this course was mainly voluntary and counted as normal working hours. However, in some

organizational units with high job demands, participation was mandatory. The main objective of these courses was to provide employees with basic knowledge and training in relation to stress, stress appraisal, coping strategies, and cognitive restructuring to enable them to cope with stress-related issues and to prepare them for the process of individual and organizational change. As well as reflecting on individual and team stressors and how to strengthen and enhance personal resources, health, and wellbeing, the stress management courses aimed to build up motivation and readiness for change while also facilitating the transfer of this newly-acquired knowledge into daily working life. Although the course content was standardized, consultants were allowed to adapt the program to the needs of participants. Across all the organizations involved in the SMI, 19% of non-supervisory employees participated in a stress management course, which was evaluated at the end by means of a short paper-based questionnaire of refreshers. S-Tool data and the data from the course evaluation questionnaire were linked by means of a standardized longitudinal code entered by participants.

The leadership courses for employees with a supervisory function also took place during the first half of the SMI and again lasted for one day, with another half-day for refreshers about six months later. Across all organizations, 88% of employees with a supervisory function participated in a leadership course. Participation was voluntary and counted as normal working hours. The leadership courses aimed to integrate a health perspective in everyday leadership routines; recognizing health issues at work, reflecting on survey results and developing concrete steps, as well as deepening understandings of teamwork, communication and information skills, work design, social support, and delegation of tasks. As leadership courses were limited to employees with a supervisory function and stress management courses to non-supervisory employees, employees could only attend one of the two course types.

Across all organizations, 34% of all employees participated in a one-day team

reflection workshop, which again took place during the first half of the SMI. Participation in the workshops was voluntary and counted as normal working hours. The mix of workshop participants was based on departmental affiliation. The main aims of these workshops were to discuss team-related results of the S-Tool survey, to work on strategies for reducing demands and strengthening resources, and to develop concrete proposals for reduction of current demands and prevention of stress in the future. In contrast to stress management and leadership courses, team reflection workshops were open to all employees. That means non-supervisory employees could participate in stress management courses and team reflection workshops; employees with a supervisory function could attend leadership courses and team reflection workshops.

Study Design and Sample

Stress management course participants who completed the S-Tool survey at t_0 and t_2 were included in the present analysis. We deleted those cases with missing data, resulting in a final study sample of $N = 145$.

The average age of the participants was $M = 38.46$ years ($SD = 10.52$). In total, 62.8% of these were male, and 68.1% participated voluntarily in the stress management courses. Almost all participants worked full-time ($M = 96.17\%$, $SD = 12.56$); Job tenure ranged between 1 month and 40 years. Around 51% of the participants had also participated in a team reflection workshop (in addition to attending a stress management course). Around 83% of participants experienced high job satisfaction, and 82% perceived their general health status as good or very good. Almost half of the participants suffered regularly from high time pressure (50.4%) and fast work pace (41.8%). Supervisor support and colleague support was rated as high by the majority of the participants (80%; 79.3%).

Measures

SMI outcome expectancy. As worksite SMIs had not previously studied the role of OE concerning a stress management course, the OE-related items were newly developed. On the basis of previous research on OE in the organizational sector (e.g., Feather et al., 2012), two general items were developed to capture OE for the anticipated individual and organizational impacts of the stress management course. Although the stress management courses were standardized, the OE items had to be formulated in a very general manner because course content varied across the different organizations according to participants' needs. The course evaluation questionnaire administered at the end of the stress management refresher training therefore included two general items concerning participants' OEs at individual and organizational levels ("Do you think the [stress management] course will have a positive impact on you personally?" and "Do you think the [stress management] course will have a positive impact on your organization?"). Items were rated by the participants on a 7-point Likert scale from 1 (*no, not at all*) to 7 (*yes, very much*).

Perceived SMI impact. Two general items from a retrospective impact assessment scale (Cronbach's $\alpha = .88$) were used to measure the perceived impact of the intervention in its entirety (cf. Jenny et al., 2014). Participants rated these items at the final measurement point (t_2). Like the OE items, one refers to perceived impact at the individual level and one to the perceived impact at the organizational level ("Did the activities of the project have a positive impact on you personally?" and "Did the activities of the project have a positive impact on your organization?"). The items concerning the perceived impact were rated on a 7-point Likert scale from 1 (*no, not at all*) to 7 (*yes, very much*).

These items, too, were necessarily general because the SMI varied considerably across the different organizations. Although the general intervention architecture was standardized (i.e., each organization applied the S-Tool survey and offered stress management courses, leadership courses, and team reflection workshops), the organizations themselves decided

whether or not to offer additional intervention elements such as presentations or other health promoting activities. Each participant rated the impact of the entire intervention on the basis of her/his own individual experiences of the intervention in her/his organization.

Change commitment. Change commitment was measured with four items developed by Müller, Jenny, and Bauer (2012) as part of the S-Tool in an extra section with scales used for evaluation of the SMI (cf. Jenny et al., 2014). Two of the four items addressed individual change commitment, and the other two referred to organizational change commitment (from the participants' point of view). These four items were part of an 8-item scale assessing individual and organizational health-oriented readiness for change. Validity and reliability analyses of this scale identified individual change commitment and organizational change commitment as two of four independent factors (see Müller et al., 2012, for a detailed description and analysis of the scale). While the individual change commitment factor refers to employees' general willingness to participate in improving personal health and the work situation, the organizational change commitment factor concerns an organization's general willingness to introduce measures to improve the work situation and the personal health of employees (from the participants' point of view). Items were rated by employees on a 7-point Likert scale from 1 (*very little*) to 7 (*a great deal*). These change commitment measures were employed at all three measurement points. For this study, only baseline measurement was included. Both individual change commitment (Cronbach's $\alpha = .83/.81/.79$ [t0/t1/t2]) and organizational change commitment (Cronbach's $\alpha = .87/.88/.86$ [t0/t1/t2]) demonstrated good scale reliability at all three measurement points.

Data Analysis

For correlations of study variables, Pearson's correlation coefficient was calculated. To investigate the structural relationship between individual and organizational OE and

perceived impact at individual and organizational levels, path analysis was applied, using the open-source software R.

For analysis of individual and organizational change paths, hierarchical regression analysis was applied, using IBM SPSS Statistics. The SPSS add-on PROCESS, developed by Hayes (2013), was employed for analysis of interaction effects with mean-centered variables.

Results

Descriptives and Inter-Item Correlations

The average rating of OE was $M = 4.99$ ($SD = 1.11$) for individual OE and $M = 4.68$ ($SD = 1.19$) for organizational OE. Voluntary and non-voluntary participants did not differ significantly on OE ratings.

The correlation matrix (Table 1) shows moderately to highly significant correlations between individual and organizational OE and perceived impact at individual and organizational levels. The two levels of OE show highly significant correlations; the same is seen for the two levels of change commitment. Correlations between individual/organizational OE and individual/organizational change commitment range from .01 to .19.

--- Insert Table 1 about here ---

Path Analysis

Figure 2 illustrates the results of the path analysis exploring the associations between individual and organizational OEs and perceived impact at individual and organizational levels, respectively.

The individual path with individual OE as the independent variable and perceived individual impact as the outcome variable was significant ($\beta = .37, p < .001$). The same applies for the organizational path with organizational OE as the independent variable and

perceived organizational impact as the outcome variable ($\beta = .19, p < .05$). These findings are in line with hypotheses 1a and 1b.

According to the results of the path analysis, there is only a weak, nonsignificant relationship between organizational OE and perceived individual impact; the same is true for the relationship between individual OE and perceived organizational impact. For this reason, it was decided to conduct the moderator analysis separately for the individual and organizational change paths.

--- Insert Figure 2 about here ---

Moderator Analyses

First, a hierarchical regression analysis was conducted with perceived individual impact as the dependent variable and individual OE and individual change commitment as independent variables. The two predictors, OE ($\beta = .39, p < .001$) and individual change commitment ($\beta = .16, p < .05$), each explained a significant proportion of the variance, where the inclusion of individual change commitment as an additional predictor resulted in a significant increase ($\Delta R^2 = .025, p < .05$) of explained variance ($R^2 = .180$) as compared to the regression with individual OE as the single predictor ($R^2 = .155$). No multicollinearity was found (Tol [Tolerance] = 1.00; VIF [Variance Inflation Factor] = 1.00).

The next step was to investigate whether there was any significant interaction between the predictors; that is, between individual OE and individual change commitment. The interaction of individual OE and individual change commitment was significant ($b = .18, p < .05$), and the inclusion of this interaction resulted in a significant increase ($\Delta R^2 = .022, p < .05$) of explained variance ($R^2 = .202$). This result is in line with hypothesis 2a. Figure 3 illustrates the interaction of the two predictors.

--- Insert Figure 3 about here ---

For the moderator analysis of the organizational change path, we conducted a hierarchical regression analysis with perceived organizational impact as the dependent variable and organizational OE and organizational change commitment as the independent variables. The analysis revealed significant standardized coefficients for both predictors, organizational OE ($\beta = .233, p < .05$) and organizational change commitment ($\beta = .239, p < .01$), where the inclusion of organizational change commitment as an additional predictor resulted in a significant increase ($\Delta R^2 = .056, p < .01$) of explained variance ($R^2 = .128$) as compared to the model with organizational OE as the single predictor ($R^2 = .072$). No multicollinearity was detected ($Tol = 1.02$; $VIF = .98$).

The interaction between organizational OE and organizational change commitment was then investigated. Contrary to hypothesis 2b, the interaction was not significant ($b = .22, p = .08$).

Discussion

The present study investigated the relationship between OEs of a stress management course and the total perceived impact of a comprehensive SMI. It was established that individual OE for stress management courses can predict a significant amount of the perceived individual impact of an entire comprehensive SMI at follow-up. The same positive relationship applies to organizational OE and perceived organizational impact of the intervention as a whole. The results of the regression analyses reveal that individual OE has stronger predictive power for the perception of individual impact than that of organizational OE for the perception of organizational impact. This can be explained by the fact that employees can influence and predict individual changes much more readily than organizational changes, as the latter are influenced by several factors that are independent from and unpredictable for the individual. The small and mainly nonsignificant correlations

between individual/organizational OE and individual/organizational change commitment indicate the discriminant validity of the newly developed OE measure.

Interaction analysis demonstrated that high individual change commitment at baseline strengthens the relationship between individual OE and perceived individual impact, whereas low individual change commitment at baseline weakens this association. Consequently, an intervention will be perceived as most successful at the individual level when participants already have a high individual change commitment at the beginning and develop high individual OE during a single intervention element. Individual change commitment should therefore be addressed and enhanced at the very beginning in future interventions.

Detailed analysis of the organizational path revealed that organizational change commitment (as rated by employees) acts as an additional predictor for perceived organizational impact but does not moderate the relationship between organizational OE and perceived organizational impact. The relatively small correlation between organizational change commitment and organizational OE aligns with the assumption that organizational OE reflects whether the *employee* is willing to support the organizational change process, whereas organizational change commitment reflects how employees perceive their *organization's* general willingness to change, which does not necessarily coincide. However, both the organization's change commitment and employees' willingness to support the organizational change process seem necessary to raise awareness of organizational impact.

Although OEs referred here only to stress management courses, OEs could also partly predict the perceived overall impact of the entire intervention. This is insofar remarkable as the perceived impact of the entire intervention could additionally be influenced by other intervention elements or structural changes. The results indicate that the stress management courses played a considerable role in individual appraisal of the entire intervention.

Strengths and Limitations

The present study collected process data during the implementation process and linked this data with outcome measurements. The availability of matched longitudinal data enabled us to study the influence of a single intervention element—that is, a stress management course—on the entire intervention change process. The data enabled us to determine the prognostic validity of individual and organizational OEs over a period of about eighteen months. We were also able to include baseline measures that might influence the individual appraisal process from the beginning. Along with the successful application of the OE concept to worksite SMI, this study provides new findings about the relationship between OE and change commitment.

All the analyses are based on self-reported data. Therefore, common method variance may have led to an exaggeration of the association between OEs and perceived impact assessments. The extent to which self-reported data can be considered accurate and reliable is frequently discussed (e.g., Cook & Campbell, 1979; Baranowski, 1985; Chan, 2009). However, OEs as well as perceived impacts must be collected via self-report questionnaires, as they aim to reflect subjective information from the participants' point of view. The meaningfulness of such subjective information in the context of interventions is demonstrated by the work of Hasson et al. (2014). They showed that the perceived impact of an intervention is strongly associated with psychological intervention outcomes, and that the perceived impact is even more important for outcomes than actual exposure to the intervention. Jenny et al. (2014) also found that high perceived impact from a retrospective point of view is associated with an improvement in the ratio of job resources (e.g., manager and peer support, job control) to job demands (e.g., time pressure, qualitative overload).

Another limitation lies in the small number of cases ($N = 145$), which has several causes. First, the stress management courses were evaluated only at the time of the refreshers, but not all of the main course participants also attended the refresher. Second, matching of

the stress management course evaluations and the S-Tool survey data was accomplished by means of a standardized longitudinal code entered by the participants. On average, only about 70% of the participants filled in the correct longitudinal code. And finally, missing data (around 38%) on the included variables led to a decreased number of applicable cases. In total, only 19% of all employees participated in stress management courses. As the majority of the study participants attended the stress management course voluntarily, the possibility of selection bias exists. However, we found no significant differences between voluntary and non-voluntary participants in study variables, although one-third of the study sample indicated that their participation was compulsory. It might be that we did not find significant differences because of the small study sample or due to the overall high OE ratings.

We used newly developed instruments since, to date, no suitable measures for capturing OE and the perceived impact for SMIs exist. Single item measures were used to keep the evaluation questionnaire short to minimize participants' effort. Although single items are often considered critically, there is often no difference in the predictive value of single item versus multiple item measures (Bergkvist & Rossiter, 2007). According to Randall (2013), "relatively simple questionnaire measures to capture data on perceived intervention quality and sustainability can be used to monitor likely employee expectations" (p. 265).

This study provides no information on the sufficiency and necessity of the stress management courses as discussed by Komaki and Goltz (2001). According to them, it would be interesting to investigate whether some components of a *treatment package* are not necessary, or whether one component alone might be sufficient. However, in this study, only one element—the stress management course—was evaluated. Thus, we are not able to compare OEs regarding the different elements. Furthermore, we do not know whether and to what extent other intervention elements, such as experiences from the team reflection

workshop or the fact that an employee's supervisor participated in a leadership course, have influenced the OE ratings of employees.

Future Research

In future research, it would be interesting to compare the OEs triggered by different intervention elements and study the interaction of these different OEs. As already recommended by Nielsen, Fredslund, and Christensen (2004), future studies should capture both employees and managers perceptions. The study results should be replicated with bigger study samples to examine the validity of the used instruments. These studies should include further influencing variables as well as further proximate and intermediate outcome measures. As other studies (e.g., Busch et al., 2010) report similarly high amounts of missing data for the process evaluation of single intervention elements, future interventions should emphasize the development of strategies to increase response rates for the evaluation of single intervention elements.

Finally, we recommend that future studies use qualitative methods to analyze the change process in more detail to better understand how interventions, change intentions, behavior change, and perceived impact are related.

Conclusion

A newly-developed instrument was used to assess OEs because the instruments in current use found in the literature are mainly project-specific and difficult to transfer to comprehensive SMIs. The results of the present study indicate that it is worth including OE as a process indicator in future studies—either to explaining inter-individual differences in respect of intervention impact or as a monitoring instrument for the successful implementation of single intervention elements. Additionally, more qualitative studies might help to improve understanding of how participants develop high OEs, and on what considerations OE ratings are based.

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Table 1

Means, Standard deviations, Scale Reliabilities (Cronbach's α), and Correlations of the Study Variables

Items/Scale	<i>M</i>	<i>SD</i>	α	Correlations				
				1	2	3	4	5
1. Individual OE	4.99	1.11		-				
2. Organizational OE	4.68	1.19		.51***	-			
3. Individual PI	3.99	1.68		.39***	.24**	-		
4. Organizational PI	3.83	1.69		.30**	.27**	.74***	-	
5. ICC	4.63	1.48	.83	.01	-.11	.16	.08	-
6. OCC	4.68	1.26	.87	.14	.19*	.14	.14	.30**

Note. OE = outcome expectancy; PI = perceived impact; ICC = individual change commitment; OCC = organizational change commitment. *Ns* range from 115 to 145.

* $p < .05$; ** $p < .01$; *** $p < .001$.

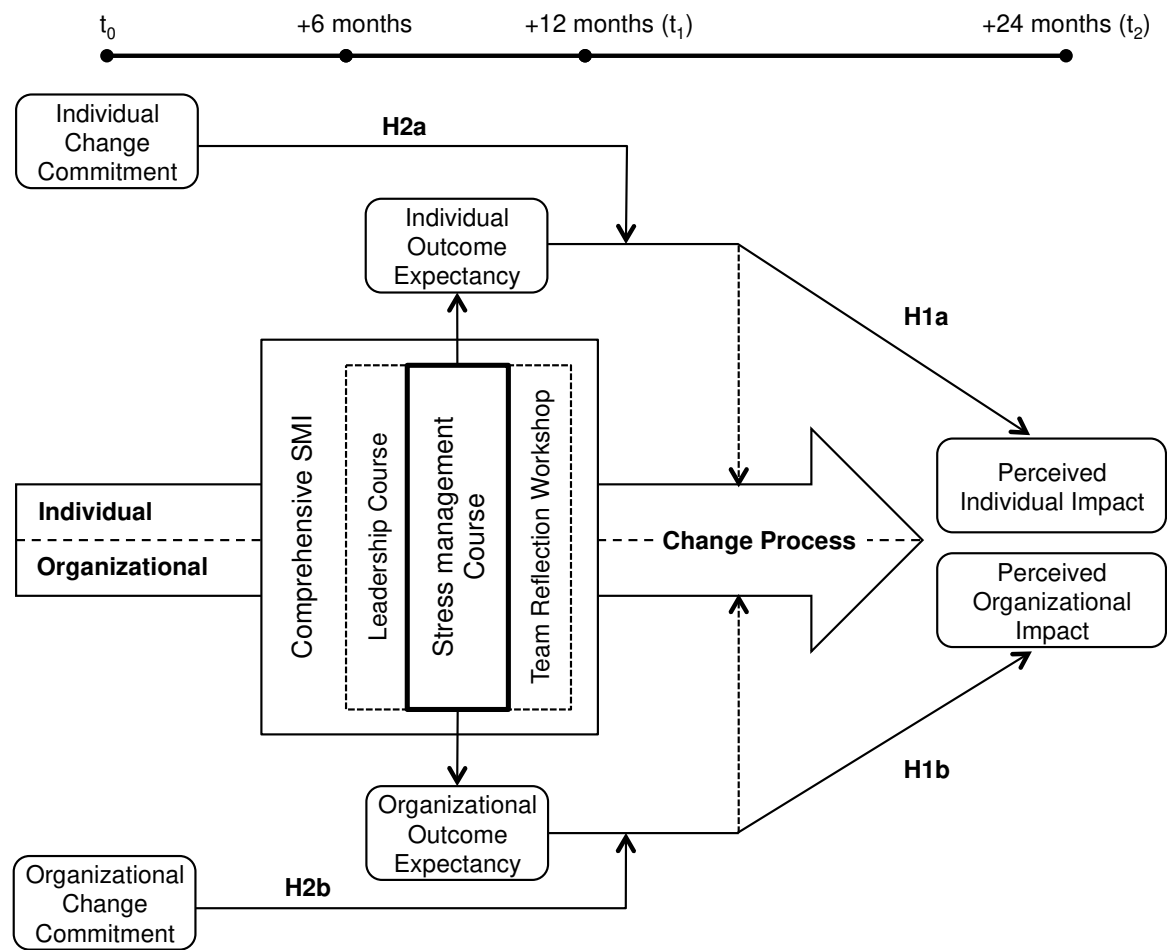


Figure 1. Individual and organizational change process in the context of a comprehensive stress management intervention (SMI). H = hypothesis.

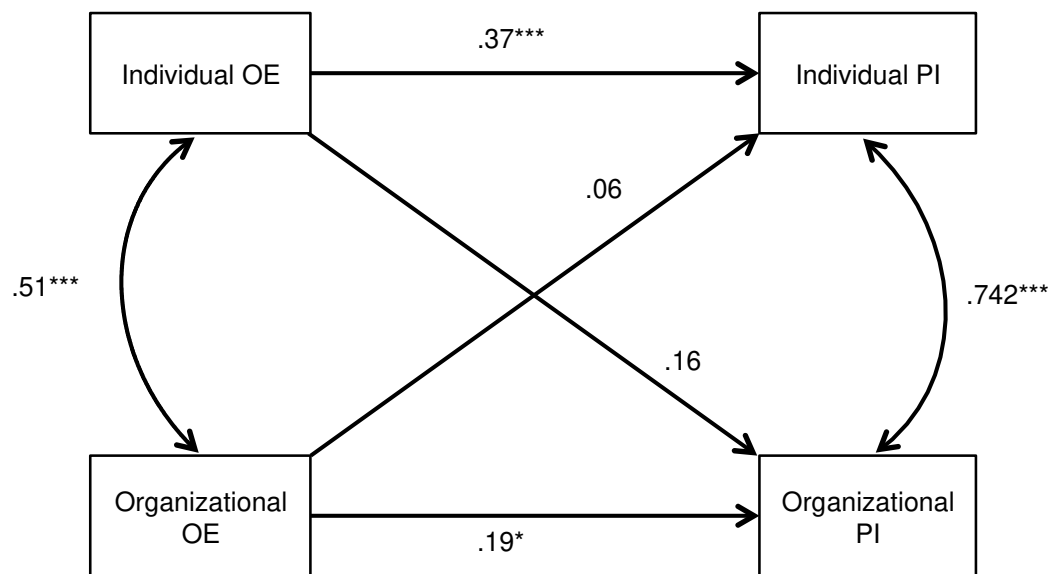


Figure 2. Structural equation model of main study variables. OE = outcome expectancy; PI = perceived impact.

* $p < .05$; *** $p < .001$.

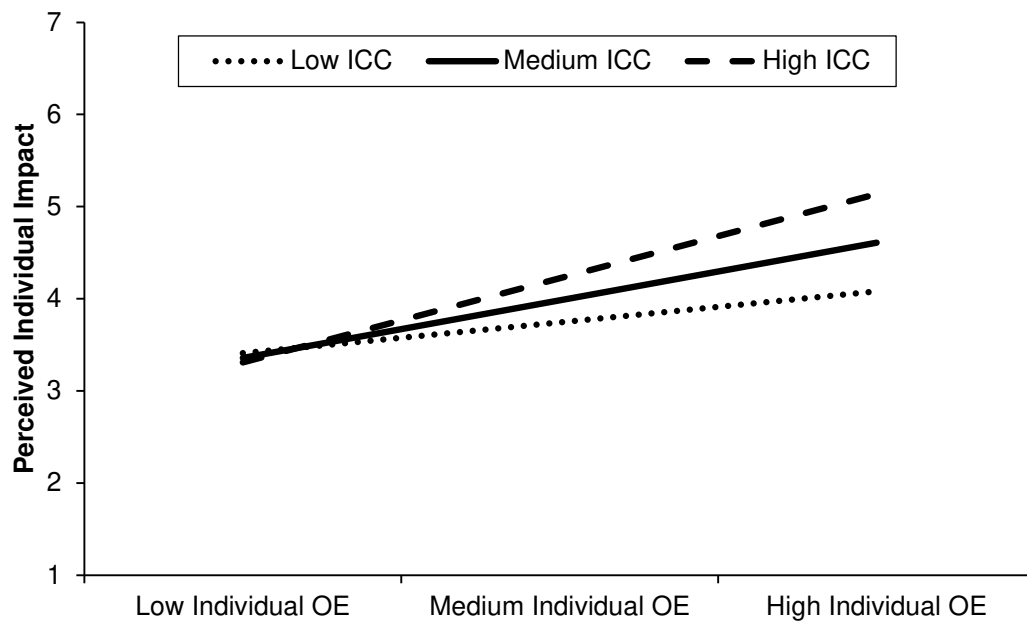


Figure 3. Perceived individual impact as a function of individual outcome expectancy level and level of individual change commitment. OE = outcome expectancy; ICC = individual change commitment.